

Claims:

1. A breeding method of lipid producing fungi that belong to genus *Mortierella*,

said method comprising an expression suppressing step of suppressing expression of a specific gene in the lipid producing fungi.

2. A method as set forth in claim 1, wherein said expression suppressing step includes an RNAi step of suppressing expression of the specific gene by an RNAi method.

3. A method as set forth in claim 2, wherein said RNAi step includes a transformation step of introducing a recombinant expression vector into the lipid producing fungi, wherein the recombinant expression vector causes expression of double stranded RNA corresponding to all of or part of a nucleotide sequence of the specific gene.

4. A method as set forth in claim 3, wherein said RNAi step further includes an expression vector constructing step of constructing the recombinant expression vector.

5. A method as set forth in claim 3 or 4, wherein the transformation step is carried out by an electroporation

method or a particle delivery method.

6. A method as set forth in any one of claims 1 through 5, wherein the lipid producing fungi are *Mortierella alpina*.

7. A method as set forth in any one of claims 1 through 6, wherein the specific gene is a lipid metabolism gene.

8. A method as set forth in claim 7, wherein the lipid metabolism gene is a fatty acid metabolism gene.

9. A method as set forth in claim 8, wherein the fatty acid metabolism gene is a gene that encodes a fatty acid chain elongase or a fatty acid desaturase.

10. A method as set forth in claim 9, wherein the gene that encodes the fatty acid chain elongase is GLELO gene or MAELO gene.

11. A method as set forth in claim 9, wherein the gene that encodes the fatty acid desaturase is a gene that encodes an enzyme selected from the group consisting of: $\Delta 5$ fatty acid desaturase, $\Delta 6$ fatty acid desaturase, $\Delta 8$ fatty acid desaturase, $\Delta 9$ fatty acid desaturase, $\Delta 12$ fatty acid

desaturase, $\Delta 15$ fatty acid desaturase, $\Delta 17$ fatty acid desaturase, and $\omega 3$ fatty acid desaturase.

12. A breeding kit for carrying out the method of any one of claims 1 through 11.

13. A breeding kit as set forth in claim 12, which includes at least one of:

(a) a recombinant expression vector for causing expression of double stranded RNA corresponding to all of or part of a nucleotide sequence of the specific gene;

(b) a reagent for constructing the recombinant expression vector of (a);

(c) a reagent for introducing the recombinant expression vector of (a) into lipid producing fungi; and

(d) a reagent for culturing the lipid producing fungi and/or a transformant strain into which the recombinant expression vector of (a) have been introduced.

14. Lipid producing fungi obtained by the method or the breeding kit as defined in any one of claims 1 through 13.

15. A lipid producing method for producing PUFA-containing lipids from the lipid producing fungi defined in claim 14.